Network pharmacology: towards the artificial intelligence-based precision traditional Chinese medicine

Abstract

Abstract Network pharmacology (NP) provides a new methodological perspective for understanding traditional medicine from a holistic perspective, giving rise to frontiers such as traditional Chinese medicine network pharmacology (TCM-NP). With the development of artificial intelligence (AI) technology, it is key for NP to develop network-based AI methods to reveal the treatment mechanism of complex diseases from massive omics data. In this review, focusing on the TCM-NP, we summarize involved AI methods into three categories: network relationship mining, network target positioning and network target navigating, and present the typical application of TCM-NP in uncovering biological basis and clinical value of Cold/Hot syndromes. Collectively, our review provides researchers with an innovative overview of the methodological progress of NP and its application in TCM from the AI perspective.